

Department of Biomedical, Industrial & Human Factors Engineering
Distance Learning Courses 2009-2010

Fall	Winter	Spring
<p>EGR 705 Design & Analysis of Engineering Experiments (4 CR) Introduction to planning and analysis of engineering experiments. Topics include basic statistics review, linear models, regression, analysis of variance, experiment designs, response surface methods, and engineering applications. (Statistics)</p> <p>IHE 601 Engineering Academic Integrity (1 CR) Introduce new engineering graduate students to ethics of engineering, scientific research, and technical writing. Additional topics include active reading, active listening, effective presentation, faculty-advisor relationships and the thesis/dissertation process.</p> <p>IHE 602 Probability for Engineers (4 CR) Presentation of probability concepts and techniques as applied to engineering applications. Introduces and applies probability distributions, measures of association, inferences on responses, and basic experimental design. Emphasis is on application of statistical tools.</p> <p>IHE 605 (ISE 405) Innovation and Entrepreneurship Seminar (1 CR) Seminars meet once a week. Guest lecturers from high-tech companies provide insight on entrepreneurship and innovation. Students gain an understanding of the associated challenges, as well as the resources available within the community.</p> <p>IHE 606 Human Factors Engineering (4 CR) Fundamentals of human factors engineering tools and processes as applied to systems development. Emphasis is placed on user-centered design principles. Material is presented through lectures and application-oriented projects.</p> <p>IHE 607 Industrial Ergonomics (4 CR) Introduces students to the application of ergonomic principles to the industrial environment. Includes subject matter on ergonomic planning and implementation, the work environment, NIOSHA work factors, and workstation and equipment design. PREREQUISITE: basic Statistics.</p> <p>IHE 670 Deterministic Operations Research Models (4 CR) Introductory course of Deterministic Models in Operations Research and their Applications in Industrial and Systems Engineering. Students will formulate appropriate models, and obtain and interpret analytical results in the context of ISE problems. PREREQUISITE: MTH 253 AND MTH 231.</p> <p>IHE 730 Heuristic Optimization (4CR) A course in advanced (non-traditional) optimization modeling techniques. Topics include biologically-inspired approaches, agent-based approaches, simulation and optimization and classical heuristic optimization methods.</p> <p>IHE 733 Advanced Topics in Human-Computer Interaction (4 CR) Seminar exposing students to theoretical and research issues associated with human-computer interaction (HCI) and cognitive-oriented work from a human factors engineering standpoint. (Must also register for HFE 890-90.)</p> <p>IHE 890 HFE Project (1-5 CR) Independent Project</p>	<p>EGR 482 Engineering Fundamentals (3 CR) A review of the fundamental concepts covered in an undergraduate engineering curriculum to help students prepare for the fundamentals of engineering examination. Senior standing in an engineering program or graduation from an engineering program required. May be taken for a letter grade or pass/unsatisfactory.</p> <p>EGR 702 Systems Engineering and Analysis (4 CR) Exposes students to the design of systems and tools for the analysis of complex technological systems. PREREQ: STT 361, MTH 232, MTH 233.</p> <p>IHE 601 Engineering Academic Integrity (1 CR) See Fall quarter for description.</p> <p>IHE 602 Probability for Engineers (4 CR) See Fall quarter for description.</p> <p>IHE 631 Human Factors Engineering Of Visual Displays (4 CR) Introduction to the design of visual display systems. Topics include radiometry and photometry, visual perception, linear systems analysis, color displays, colorimetry 3D displays, standards guidelines. PREREQ: HFE 506, EE 521.</p> <p>IHE 685 (BME 685) Six Sigma for Engineers (4 CR) The course introduces students to the practical application of Six Sigma tools in the manufacturing & Service projects. The course also includes video tapes & case studies of real world industrial operations. PREREQ Statistics</p> <p>IHE 690 (CEG 490/690, ISE 490) Technology-Based Ventures (4 CR) Train students on methods to develop breakthrough products with an entrepreneurial perspective and managerial outlook. Topics include advanced product development, protecting intellectual property, fostering strategic and creative thinking, effectively leading technology-driven teams.</p> <p>IHE 709 Integer Programming (4 CR) This course is to present theory and algorithm to solve integer programs and their applications in industry. Applications will be drawn from diverse areas and state of the art optimization software will be used. PREREQUISITE: HFE 670/ISE 470 (Even Years Only)</p> <p>IHE 742 Understanding and Aiding Human Decision Making (4 CR) Introduction to the methods, concepts, models and results of the science of decision-making and human-centered design. Prescriptive and descriptive theories of human decision making are discussed and contrasted. Approaches to aiding human decision making are considered in the context of these theoretical frameworks. Applications-oriented issues are emphasized.</p> <p>IHE 745 Advanced Industrial Ergonomics (4CR) Design of Workstations & Hand-tools using Physiology and Biomechanics approach. Ergonomic analysis of Assembly, Machining & Manual Material Handling operations. Practical solutions & real world case studies to improve productivity & reduce Workers Compensation costs. PREREQ HFE 607</p> <p>IHE 765 Engineering Health Systems (4) This course is a seminar course that introduces issues in the design of health systems. Example topics include human error, team issues, medical device design, human factors techniques for analyzing health systems, etc.</p> <p>IHE 890 HFE Project (1-5 CR) Independent Project</p>	<p>IHE 601 Engineering Academic Integrity (1 CR) See Fall quarter for description.</p> <p>IHE 603 Statistics for Engineers (4 CR) Focus on analysis techniques for multiple variables, including ANOVA and multiple regression, as applied to engineering testing, development, and manufacturing. Process analysis and improvement techniques presented, long with tools for reliability analysis.</p> <p>IHE 605 (ISE 405) Innovation and Entrepreneurship Seminar (1 CR) Seminars meet once a week. Guest lecturers from high-tech companies provide insight on entrepreneurship and innovation. Students gain an understanding of associated challenges, as well as the resources available within the community.</p> <p>IHE 651 Human Factors Engineering In Computer Systems Design (4 CR) Theoretical paradigms in human-computer interaction and their application to interface design are examined. Emphasis is placed on advanced interface technologies such as multimodel input/output, hypertext, and knowledge-based systems. PREREQUISITE: CS 220, STT 561(361), HFE 650(450).</p> <p>IHE 680 Engineering in Occupational Safety and Health (4 CR) Discusses and demonstrates the role and responsibility of engineers in occupational safety and health related issues. Focuses on the application of human factors engineering design principles as a proactive approach for controlling occupational injuries. PREREQ: HFE 607</p> <p>IHE 682 Operations and Facilities Design (4 CR) Provides a fundamental understanding of techniques for the layout and organization of operations in modern production and service facilities.</p> <p>IHE 683 Integrated Systems for Manufacturing (4 CR) Explores industrial engineering concepts and quantitative techniques as it applies to manufacturing planning and control systems. Discusses production and service industries as well as supply chain systems. PREREQ: MTH 231, ISE 301, ISE 470, ISE 471.</p> <p>IHE 707 Successful Applications of Industrial Engineering (4 CR) This course exposes students to various applications of industrial engineering techniques such as forecasting, optimization, simulation, inventory control, etc. helps students to identify practical problems and a deeper understanding of these solution techniques.</p> <p>IHE 734 (4) Reviews issues related to designing, conducting, and analyzing experiments. Topics include experimental design, experimental ethics, evaluating statistical results, and writing research papers. Students are required to conduct and analyze an experiment.</p> <p>IHE 735 Advanced Systems Models (4 CR) Studies quantitative means of modeling, analyzing, and predicting the performance of human-machine system Topics include control theory, estimation theory, fuzzy set theory, information theory, and knowledge-based systems. (Even Years Only)</p> <p>IHE 744 (BME 744) Kaizen Lean Manufacturing Engineering (4 CR) The course introduces students to the practical application of Lean manufacturing & Kaizen techniques in the manufacturing environment. It also includes case study and team projects of real world problems and solutions. PREREQ: HFE 607 (tr be taken as co-req this term only)</p> <p>IHE 890 Introduction to Data Mining (4 CR) The last decade has seen an explosive growth in database technology and the amount of data collected. This has created an unprecedented opportunity for data mining, which is "the nontrivial process of identifying valid, novel, potentially useful, and understandable patterns in data". This course introduces the concepts, techniques, and applications of data mining. In addition, students will get hands-on data mining experience via small projects.</p> <p>IHE 890 HFE Project (1-5 CR) Independent Project</p>